



LUMINAIRE TESTING LABORATORY, INC.

SUSTAINING
MEMBER
of the
IESNA

905 Harrison Street · Allentown, PA 18103 · 610-770-1044 · Fax 610-770-8912 · www.LuminaireTesting.com

LTL NUMBER: 16730 DATE: 09-28-2009
 PREPARED FOR: RENOVA LIGHTING SYSTEMS
 CATALOG NUMBER: ECS-LPW4-MN-232-UNV-12L
 LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED SPECULAR ALUMINUM REFLECTOR, CLEAR PRISMATIC PLASTIC ENCLOSURE WITH LINEAR PRISMATIC SIDES.
 LAMP: TWO 32 WATT T8 LINEAR FLUORESCENT LAMPS RATED AT 2850 LUMENS EACH.
 LAMP CATALOG NUMBER: PHILIPS F32T8/TL841/ALTO
 BALLAST: ONE SYLVANIA "QUICKTRONIC" QHE2X32T8/UNV-ISL-SC
 MOUNTING: SURFACE
 ELECTRICAL VALUES: 120.0VAC, 0.3980A, 47.71W

Candela Distribution

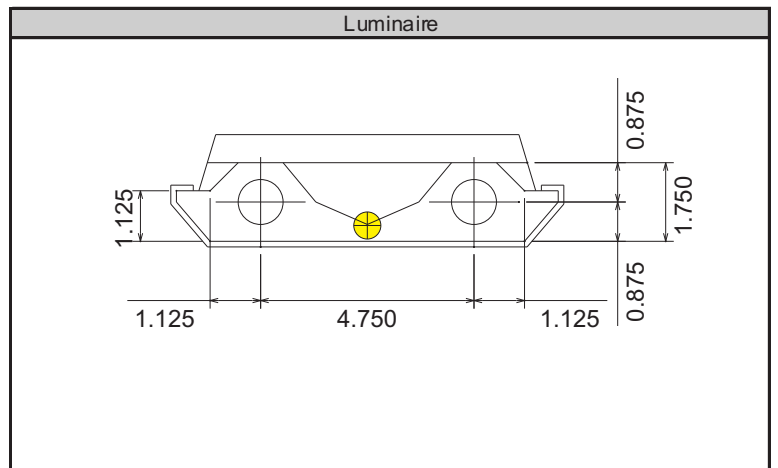
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	
5	1687	1688	1692	1685	1683	1685	1692	1688	1687	1688	1692	1685	1683	1685	1692	1688	160.3
15	1636	1629	1633	1636	1641	1636	1633	1629	1636	1629	1633	1636	1641	1636	1633	1629	462.0
25	1528	1513	1547	1575	1581	1575	1547	1513	1528	1513	1547	1575	1581	1575	1547	1513	712.1
35	1348	1336	1373	1363	1359	1363	1373	1336	1348	1336	1373	1363	1359	1363	1373	1336	847.2
45	1051	1049	1091	1096	1097	1096	1091	1049	1051	1049	1091	1096	1097	1096	1091	1049	826.8
55	574	663	766	785	787	785	766	663	574	663	766	785	787	785	766	663	650.8
65	329	374	474	550	574	550	474	374	329	374	474	550	574	550	474	374	461.5
75	184	215	293	378	407	378	293	215	184	215	293	378	407	378	293	215	312.8
85	53	103	168	235	245	235	168	103	53	103	168	235	245	235	168	103	178.5
90	2	48	113	163	183	163	113	48	2	48	113	163	183	163	113	48	
95	1	37	94	137	154	137	94	37	1	37	94	137	154	137	94	37	94.7
105	4	21	63	96	108	96	63	21	4	21	63	96	108	96	63	21	63.0
115	6	8	42	67	77	67	42	8	6	8	42	67	77	67	42	8	39.9
125	8	11	22	43	50	43	22	11	8	11	22	43	50	43	22	11	23.5
135	9	9	17	20	27	20	17	9	9	9	17	20	27	20	17	9	13.1
145	9	10	15	18	20	18	15	10	9	10	15	18	20	18	15	10	9.1
155	9	10	11	13	16	13	11	10	9	10	11	13	16	13	11	10	5.3
165	10	10	11	13	14	13	11	10	10	10	11	13	14	13	11	10	3.2
175	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	1.0
180	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	

Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1334.4	23.4%	27.4%
0-40	2181.5	38.3%	44.8%
0-60	3659.2	64.2%	75.2%
0-90	4612.1	80.9%	94.8%
90-180	252.9	4.4%	5.2%
0-180	4865.0	85.4%	100.0%

Total luminaire efficiency: 85.4%

CIE Type: Direct
 Spacing Criterion: 0 deg: 1.26 90 deg: 1.28
 180 deg: 1.26 270 deg: 1.28



Approved By: MG

THIS REPORT BASED ON LM-41 AND OTHER PERTINENT IESNA PROCEDURES.



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Candela Tabulation (5 degree Vertical Increments)

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698	1698
5	1687	1688	1692	1685	1683	1685	1692	1688	1687	1688	1692	1685	1683	1685	1692	1688
10	1668	1666	1666	1660	1661	1660	1666	1666	1668	1666	1666	1660	1661	1660	1666	1666
15	1636	1629	1633	1636	1641	1636	1633	1629	1636	1629	1633	1636	1641	1636	1633	1629
20	1590	1578	1593	1614	1626	1614	1593	1578	1590	1578	1593	1614	1626	1614	1593	1578
25	1528	1513	1547	1575	1581	1575	1547	1513	1528	1513	1547	1575	1581	1575	1547	1513
30	1449	1435	1479	1486	1483	1486	1479	1435	1449	1435	1479	1486	1483	1486	1479	1435
35	1348	1336	1373	1363	1359	1363	1373	1336	1348	1336	1373	1363	1359	1363	1373	1336
40	1222	1210	1239	1234	1231	1234	1239	1210	1222	1210	1239	1234	1231	1234	1239	1210
45	1051	1049	1091	1096	1097	1096	1091	1049	1051	1049	1091	1096	1097	1096	1091	1049
50	810	860	930	940	942	940	930	860	810	860	930	940	942	940	930	860
55	574	663	766	785	787	785	766	663	574	663	766	785	787	785	766	663
60	427	497	610	655	667	655	610	497	427	497	610	655	667	655	610	497
65	329	374	474	550	574	550	474	374	329	374	474	550	574	550	474	374
70	248	286	368	460	487	460	368	286	248	286	368	460	487	460	368	286
75	184	215	293	378	407	378	293	215	184	215	293	378	407	378	293	215
80	118	155	229	304	323	304	229	155	118	155	229	304	323	304	229	155
85	53	103	168	235	245	235	168	103	53	103	168	235	245	235	168	103
90	2	48	113	163	183	163	113	48	2	48	113	163	183	163	113	48
95	1	37	94	137	154	137	94	37	1	37	94	137	154	137	94	37
100	3	28	78	116	130	116	78	28	3	28	78	116	130	116	78	28
105	4	21	63	96	108	96	63	21	4	21	63	96	108	96	63	21
110	5	13	53	80	91	80	53	13	5	13	53	80	91	80	53	13
115	6	8	42	67	77	67	42	8	6	8	42	67	77	67	42	8
120	8	10	31	55	63	55	31	10	8	10	31	55	63	55	31	10
125	8	11	22	43	50	43	22	11	8	11	22	43	50	43	22	11
130	8	11	16	32	38	32	16	11	8	11	16	32	38	32	16	11
135	9	9	17	20	27	20	17	9	9	9	17	20	27	20	17	9
140	10	10	17	20	22	20	17	10	10	10	17	20	22	20	17	10
145	9	10	15	18	20	18	15	10	9	10	15	18	20	18	15	10
150	9	10	11	17	18	17	11	10	9	10	11	17	18	17	11	10
155	9	10	11	13	16	13	11	10	9	10	11	13	16	13	11	10
160	10	10	13	10	10	10	13	10	10	10	13	10	10	10	13	10
165	10	10	11	13	14	13	11	10	10	10	11	13	14	13	11	10
170	10	10	10	11	9	11	10	10	10	10	10	11	9	11	10	10
175	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
180	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11

Zonal Lumen Tabulation (5 degree zones)

Zone	Lumens	Zone	Lumens	Zone	Lumens	Zone	Lumens
0-5	40.5	45-50	399.6	90-95	51.8	135-140	5.7
5-10	119.8	50-55	352.1	95-100	42.9	140-145	5.0
10-15	195.6	55-60	298.7	100-105	34.9	145-150	4.1
15-20	266.4	60-65	251.3	105-110	28.1	150-155	3.1
20-25	330.3	65-70	210.2	110-115	22.2	155-160	2.3
25-30	381.8	70-75	173.5	115-120	17.7	160-165	1.9
30-35	416.0	75-80	139.3	120-125	13.6	165-170	1.3
35-40	431.1	80-85	106.3	125-130	9.9	170-175	0.7
40-45	427.2	85-90	72.3	130-135	7.4	175-180	0.2



Coefficients of Utilization - Zonal Cavity Method												
Effective Floor Cavity Reflectance 20%												
Ceiling Cavity Reflectance	90				80				70			
	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)												
0	1.035	1.035	1.035	1.035	1.006	1.006	1.006	1.006	0.977	0.977	0.977	0.977
1	0.944	0.897	0.856	0.819	0.915	0.873	0.835	0.801	0.887	0.849	0.815	0.784
2	0.862	0.784	0.72	0.667	0.834	0.763	0.705	0.656	0.807	0.743	0.69	0.644
3	0.788	0.69	0.616	0.557	0.762	0.673	0.604	0.549	0.737	0.656	0.592	0.541
4	0.724	0.613	0.534	0.474	0.699	0.598	0.524	0.468	0.676	0.584	0.515	0.462
5	0.667	0.549	0.468	0.409	0.644	0.536	0.461	0.405	0.623	0.524	0.454	0.401
6	0.616	0.495	0.415	0.358	0.596	0.484	0.409	0.355	0.577	0.474	0.403	0.352
7	0.571	0.449	0.371	0.317	0.553	0.44	0.366	0.314	0.536	0.431	0.361	0.312
8	0.532	0.41	0.334	0.283	0.515	0.402	0.33	0.281	0.499	0.394	0.326	0.279
9	0.497	0.376	0.303	0.255	0.482	0.369	0.3	0.253	0.467	0.362	0.296	0.251
10	0.465	0.347	0.277	0.231	0.452	0.34	0.274	0.23	0.439	0.334	0.271	0.228

Ceiling Cavity Reflectance	50				30			10			0
	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	0.924	0.924	0.924	0.924	0.875	0.875	0.875	0.83	0.83	0.83	0.809
1	0.835	0.804	0.776	0.751	0.763	0.741	0.72	0.726	0.708	0.691	0.67
2	0.758	0.706	0.661	0.623	0.671	0.634	0.602	0.639	0.609	0.582	0.561
3	0.691	0.624	0.57	0.526	0.595	0.549	0.511	0.568	0.53	0.497	0.477
4	0.634	0.557	0.498	0.451	0.532	0.481	0.44	0.509	0.466	0.43	0.41
5	0.585	0.501	0.44	0.392	0.48	0.426	0.384	0.46	0.413	0.376	0.357
6	0.542	0.454	0.392	0.345	0.435	0.381	0.339	0.418	0.37	0.332	0.314
7	0.504	0.413	0.352	0.306	0.397	0.342	0.301	0.382	0.334	0.296	0.279
8	0.47	0.379	0.318	0.275	0.365	0.31	0.27	0.352	0.303	0.266	0.249
9	0.441	0.349	0.29	0.248	0.337	0.283	0.244	0.325	0.277	0.241	0.225
10	0.415	0.323	0.265	0.225	0.312	0.259	0.222	0.302	0.254	0.219	0.204

Average Luminance Table (cd/m²)

	0	45	90
0	6980	6980	6980
45	6109	6186	6002
55	4116	5162	5048
65	3201	4083	4618
75	2916	3662	4585
85	2518	4044	4849

THIS TEST WAS CONDUCTED USING RELATIVE PHOTOMETRY TECHNIQUES ACCORDING TO STANDARD IESNA PROCEDURES. THE USER MUST THEREFORE USE CAUTION IN THE FOLLOWING SITUATIONS: 1) THIS TEST WAS PERFORMED USING A SPECIFIC BALLAST/LAMP COMBINATION. EXTRAPOLATION OF THESE DATA FOR OTHER BALLAST/LAMP COMBINATIONS MAY PRODUCE ERRONEOUS RESULTS. 2) ACCORDING TO IESNA PROCEDURES, THE BALLAST(S) AND LAMP(S) ARE PRESUMED TO PRODUCE 100% OF RATED OUTPUT. AN APPROPRIATE BALLAST FACTOR MUST BE APPLIED TO THE LUMEN OUTPUT RATINGS AND LUMINOUS INTENSITY VALUES GIVEN. 3) THIS TEST WAS CONDUCTED IN A CONTROLLED LABORATORY ENVIRONMENT WHERE THE AMBIENT TEMPERATURE WAS HELD AT 25 °C ±1°C. FIELD PERFORMANCE MAY DIFFER PARTICULARLY IN REGARDS TO CHANGE IN LUMINOUS OUTPUT AS A RESULT OF DIFFERENCE IN AMBIENT TEMPERATURE AND METHOD OF MOUNTING THE LUMINAIRE.

